

Application No.: 10/074,600

Filed: February 12, 2002

TC Art Unit: 2157

Confirmation No.: 4837

AMENDMENTS TO THE CLAIMS

1. (currently amended) A data communications network, comprising:

an end station;

a data communications ring configured for spatial reuse; and

a plurality of nodes coupled to the ring, the plurality of nodes including first and second bridges~~coupled to the ring~~, the first bridge also being coupled to the end station,

wherein the second bridge is operative (1) to learn an association between the first bridge and the end station, and (2) upon receiving a packet destined for the end station: (i) to forward the received packet as a broadcast transmission in a manner indicating that the packet is to be examined by each of the plurality of nodes on the ring, in the event that the association between the first bridge and the end station has not yet been learned, and (ii) to forward the received packet as a unicast transmission between the second bridge and ~~to the first bridge on the ring~~, in the event that the association between the first bridge and the end station has been learned.

2. (original) A data communications network according to claim 1, wherein the end station comprises an interworking bridge.

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3. (original) A data communications network according to claim 2, wherein the interworking bridge provides transparent LAN services via the ring to customers connected to external LAN segments.

4. (original) A data communications network according to claim 1, wherein the ring is a resilient packet ring.

5. (original) A data communications network according to claim 1, wherein the ring is a first ring, and further comprising a second ring, the second ring coupling the first bridge to the end station.

6. (original) A data communications network according to claim 1, wherein the end station is a first end station, and further comprising a second end station, the second end station being coupled to the second bridge, and wherein the first bridge is operative (1) to learn an association between the second bridge and the second end station, and (2) upon receiving a packet destined for the second end station: (i) to forward the received packet as a broadcast transmission on the ring in the event that

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the association between the second bridge and the second end station has not yet been learned, and (ii) to forward the received packet as a unicast transmission to the second bridge on the ring in the event that the association between the second bridge and the second end station has been learned.

7. (original) A data communications network according to claim 6, wherein the first bridge learns the association between the second bridge and the second end station by monitoring a broadcast transmission of the second bridge on the ring, the broadcast transmission including an identifier of the second bridge as an ingress bridge and an address of the second end station as a source of a message included in the transmission.

8. (original) A data communications network according to claim 6, wherein the ring is a first data communications ring, and further comprising (i) a second data communications ring configured for spatial reuse, the second ring coupling the second bridge to the second end station, and (ii) a third bridge, the third bridge being coupled to both the first and second rings as a backup to the second bridge, and wherein the second bridge is operative to send unicast update messages to the third bridge

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enabling the third bridge to keep track of the associations learned by the second bridge, and wherein the third bridge is operative upon failure of the second bridge to begin the learning of associations and the forwarding of packets on the first ring as broadcast or unicast transmissions depending on whether respective associations have been learned.

9. (currently amended) A method of operating a data communications network having an end station, a data communications ring configured for spatial reuse, a plurality of nodes coupled to the ring, the plurality of nodes including and first and second bridges ~~coupled to the ring~~, the first bridge being coupled to the end station, comprising:

at the second bridge, learning an association between the first bridge and the end station; and

at the second bridge, upon receiving a packet destined for the end station: (i) in a first forwarding step, forwarding the received packet as a broadcast transmission in a manner indicating that the packet is to be examined by each of the plurality of nodes on the ring, in the event that the association between the first bridge and the end station has not yet been learned, and (ii) in a second forwarding step, forwarding the received packet

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as a unicast transmission between the second bridge and to the  
first bridge on the ring, in the event that the association  
between the first bridge and the end station has been learned.

10. (original) A method according to claim 9, wherein the end  
station comprises an interworking bridge.

11. (original) A method according to claim 10, wherein the  
interworking bridge provides transparent LAN services via the ring  
to customers connected to external LAN segments.

12. (original) A method according to claim 9, wherein the ring is  
a resilient packet ring.

13. (original) A method according to claim 9, wherein the ring is  
a first ring, and wherein the network further comprises a second  
ring, the second ring coupling the first bridge to the end  
station.

14. (original) A method according to claim 9, wherein the end  
station is a first end station, and wherein the network further

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includes a second end station, the second end station being coupled to the second bridge, and further comprising:

at the first bridge, learning an association between the second bridge and the second end station; and

at the first bridge, upon receiving a packet destined for the second end station: (i) forwarding the received packet as a broadcast transmission on the ring in the event that the association between the second bridge and the second end station has not yet been learned, and (ii) forwarding the received packet as a unicast transmission to the second bridge on the ring in the event that the association between the second bridge and the second end station has been learned.

15. (original) A method according to claim 14, wherein the first bridge learns the association between the second bridge and the second end station by monitoring a broadcast transmission of the second bridge on the ring, the broadcast transmission including an identifier of the second bridge as an ingress bridge and an address of the second end station as a source of a message included in the broadcast transmission.

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16. (original) A method according to claim 14, wherein the ring is a first data communications ring, and wherein the network further comprises a second data communications ring configured for spatial reuse, the second ring coupling the second bridge to the second end station, and a third bridge, the third bridge being coupled to both the first and second rings as a backup to the second bridge, and further comprising:

at the second bridge, sending unicast update messages to the third bridge enabling the third bridge to keep track of the associations learned by the second bridge; and

at the third bridge, upon failure of the second bridge, beginning the learning of associations and the forwarding of packets on the first ring as broadcast or unicast transmissions depending on whether respective associations have been learned.

17. (new) A data communications network according to claim 1,

wherein the packet contains first and second information, the first information indicating an identity of at least one of a source node and a destination node of the packet, the second information indicating an identity of at least one of an ingress node and an egress node for the packet, and

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wherein the second bridge is operative (2) upon receiving a packet destined for the end station: (ii) to forward the received packet as a unicast transmission to the first bridge on the ring in the event that the association between the first bridge and the end station has been learned, the first information identifying the end station as one of the source node and the destination node of the packet, and the second information identifying the first bridge as one of the ingress node and the egress node for the packet.

18. (new) A method according to claim 9,

wherein the packet contains first and second information, the first information indicating an identity of at least one of a source node and a destination node of the packet, the second information indicating an identity of at least one of an ingress node and an egress node for the packet, and

wherein the second forwarding step includes forwarding the received packet as a unicast transmission to the first bridge on the ring in the event that the association between the first bridge and the end station has been learned, the first information identifying the end station as one of the source node and the destination node of the packet, and the second information

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identifying the first bridge as one of the ingress node and the  
egress node for the packet.

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